

Command Window

```
>> %Q1-->
```

```
>> 100+290
```

```
ans =
```

```
390
```

```
>> 4568-7658
```

```
ans =
```

```
-3090
```

```
>> 4578*9567
```

```
ans =
```

```
43797726
```

```
>> 45^5
```

```
ans =
```

```
184528125
```

```
>> 100^(1/3)
```

```
ans =
```

Command Window

```
>> %Q2-->
>> X=2;
>> X^2+56*X

ans =

    116

>> C=X^2+56*X

C =

    116

>> a=100+290

a =

    390

>> % here if we use variable (say "a") then value of operation will be assigned to given variable ('a') otherwise it will be assigned to default variable 'ans'
fx >>
```

Command Window

```
>> %Q3-->a)->i) generating matrices
```

```
>> A=[1 3] %1x2 matrix
```

A =

```
1    3
```

```
>> B=[1;3] % 2x1 matrix
```

B =

```
1
3
```

```
>> C=10*round(randn(3)) %3x3 matrix
```

C =

```
-10    40    30
  0    30    10
  0   -10     0
```

```
>> n=5; D=10*round(randn(n)) %nxn matrix ; let's take n=5
```

```
D =
```

10	10	0	-10	-30
0	10	10	10	10
0	-10	10	-10	0
10	10	0	-10	-10
10	20	0	-10	10

```
6. |
```

Command Window

```
>> %Q3-->a)->ii)
```

```
>> A=[1 2 3;3 4 5;7 8 9]
```

```
A =
```

1	2	3
3	4	5
7	8	9

```
>> B=A^2 % square
```

```
B =
```

28	34	40
50	62	74
94	118	142

```
>> C=A^3 % cube
```

```
C =
```

410	512	614
754	940	1126
1442	1796	2150

f_x >> |

Command Window

```
>> %Q3-->a)->iv)
>> A=[1 2 3 5;6 7 8 9 ;1 2 3 5 ;5 6 7 8];
>> det(A) % determinant of A

ans =

    0

>> T=A' % transpose of A

T =

     1     6     1     5
     2     7     2     6
     3     8     3     7
     5     9     5     8

>> A_1=inv(A) %inverse of A
Warning: Matrix is singular to working precision.

A_1 =

    Inf    Inf    Inf    Inf
    Inf    Inf    Inf    Inf
    Inf    Inf    Inf    Inf
    Inf    Inf    Inf    Inf
```

Command Window

```
>> %Q3-->2 matrix operations
>> A=10*(randn(10)) %10x10 matrix
```

A =

-13.0769	-2.0497	10.3469	14.3838	-0.3005	15.3263	0.8593	-14.0227	6.9662	1.8733
-4.3359	-1.2414	7.2689	3.2519	-1.6488	-7.6967	-14.9159	-14.2238	8.3509	-0.8249
3.4262	14.8970	-3.0344	-7.5493	6.2771	3.7138	-7.4230	4.8819	-2.4372	-19.3302
35.7840	14.0903	2.9387	13.7030	10.9327	-2.2558	-10.6158	-1.7738	2.1567	-4.3897
27.6944	14.1719	-7.8728	-17.1152	11.0927	11.1736	23.5046	-1.9605	-11.6584	-17.9468
-13.4989	6.7150	8.8840	-1.0224	-8.6365	-10.8906	-6.1560	14.1931	-11.4795	8.4038
30.3492	-12.0749	-11.4707	-2.4145	0.7736	0.3256	7.4808	2.9158	1.0487	-8.8803
7.2540	7.1724	-10.6887	3.1921	-12.1412	5.5253	-1.9242	1.9781	7.2225	1.0009
-0.6305	16.3024	-8.0950	3.1286	-11.1350	11.0061	8.8861	15.8770	25.8549	-5.4453
7.1474	4.8889	-29.4428	-8.6488	-0.0685	15.4421	-7.6485	-8.0447	-6.6689	3.0352

```
>> B=A(1,10) % element of 1st row and 10th column is extracted as B
```

B =

1.8733

```
>> A(2,2)=100 % element of position 2nd row and 2nd column replaced with 100
```

A =

-13.0769	-2.0497	10.3469	14.3838	-0.3005	15.3263	0.8593	-14.0227	6.9662	1.8733
-4.3359	100.0000	7.2689	3.2519	-1.6488	-7.6967	-14.9159	-14.2238	8.3509	-0.8249
3.4262	14.8970	-3.0344	-7.5493	6.2771	3.7138	-7.4230	4.8819	-2.4372	-19.3302
35.7840	14.0903	2.9387	13.7030	10.9327	-2.2558	-10.6158	-1.7738	2.1567	-4.3897
27.6944	14.1719	-7.8728	-17.1152	11.0927	11.1736	23.5046	-1.9605	-11.6584	-17.9468
-13.4989	6.7150	8.8840	-1.0224	-8.6365	-10.8906	-6.1560	14.1931	-11.4795	8.4038
30.3492	-12.0749	-11.4707	-2.4145	0.7736	0.3256	7.4808	2.9158	1.0487	-8.8803

Command Window

```

7       7      -11      3      -12      6      -2      2      7      1
-1      16      -8      3      -11      11      9      16      26     -5
7       5      -29      -9      0      15      -8      -8      -7      3

```

```
>> ceil(A) % rounding towards + infinity
```

```
ans =
```

```

-13     -2     11     15      0     16      1    -14      7      2
-4     100      8      4     -1     -7    -14    -14      9      0
 4      15     -3     -7      7      4     -7      5     -2    -19
36      15      3     14     11     -2    -10     -1      3     -4
28      15     -7    -17     12     12     24     -1    -11    -17
-13      7      9     -1     -8    -10     -6     15    -11      9
31     -12    -11     -2      1      1      8      3      2     -8
 8       8    -10      4    -12      6     -1      2      8      2
 0      17     -8      4    -11     12      9     16     26     -5
 8       5    -29     -8      0     16     -7     -8     -6      4

```

```
>> floor(A) % rounding towards - infinity
```

```
ans =
```

```

-14     -3     10     14     -1     15      0    -15      6      1
-5     100      7      3     -2     -8    -15    -15      8     -1
 3      14     -4     -8      6      3     -8      4     -3    -20
35      14      2     13     10     -3    -11     -2      2     -5
27      14     -8    -18     11     11     23     -2    -12    -18
-14      6      8     -2     -9    -11     -7     14    -12      8
30     -13    -12     -3      0      0      7      2      1     -9
 7       7    -11      3    -13      5     -2      1      7      1
-1      16     -9      3    -12     11      8     15     25     -6
 7       4    -30     -9     -1     15     -8     -9     -7      3

```

fx




```
>> B=A(4:6,6:8) %B is submatrix of A having elements of 4th to 6th row and 6th to 8th column
```

```
B =  
    -2.2558   -10.6158    -1.7738  
    11.1736    23.5046    -1.9605  
   -10.8906    -6.1560    14.1931
```

```
>> A(2,:)=[] % 2nd row is deleted
```

```
A =  
   -13.0769   -2.0497   10.3469   14.3838   -0.3005   15.3263    0.8593  -14.0227    6.9662    1.8733  
    3.4262   14.8970   -3.0344   -7.5493    6.2771    3.7138   -7.4230    4.8819   -2.4372  -19.3302  
   35.7840   14.0903    2.9387   13.7030   10.9327   -2.2558  -10.6158   -1.7738    2.1567   -4.3897  
   27.6944   14.1719   -7.8728  -17.1152   11.0927   11.1736   23.5046   -1.9605  -11.6584  -17.9468  
  -13.4989    6.7150    8.8840   -1.0224   -8.6365  -10.8906   -6.1560   14.1931  -11.4795    8.4038  
   30.3492  -12.0749  -11.4707   -2.4145    0.7736    0.3256    7.4808    2.9158    1.0487   -8.8803  
    7.2540    7.1724  -10.6887    3.1921  -12.1412    5.5253   -1.9242    1.9781    7.2225    1.0009  
   -0.6305   16.3024   -8.0950    3.1286  -11.1350   11.0061    8.8861   15.8770   25.8549  -5.4453  
    7.1474    4.8889  -29.4428   -8.6488   -0.0685   15.4421   -7.6485   -8.0447   -6.6689    3.0352
```

```
>>
```

Command Window

```
>> %Q4-->
>> format long
>> pi    % 15 digits after decimal point

ans =

    3.141592653589793

>> format short
>> fprintf(" %.7f\n",pi)    % 7 digits after decimal point
    3.1415927
>> R=0.005 ;S=2*pi*R;Area=pi*(R^2); % S is circumference and Area is area of circle with radius 5mm
>> S

S =

    0.0314

>> Area

Area =

    7.8540e-05
```

Command Window

```
>> Area
```

```
Area =
```

```
7.8540e-05
```

```
>> %Q5-->a) area and hypt of triangle with sides 8 mm and 6 mm.
```

```
>> A=8;B=6;
```

```
>> Area=A*B/2
```

```
Area =
```

```
24
```

```
>> hypt=(A^2+B^2)^0.5
```

```
hypt =
```

```
10
```

```
>> %Q5-->b) area of triangle with sides 5,5,4 (mm)
```

```
>> S=(5+5+4)/2 %S=(a+b+c)/2 ...semiperimeter
```

```
S =
```

```
7
```

```
>> Area=sqrt(S*(S-5)*(S-5)*(S-4)) % area of triangle using Heron's formula
```

```
Area =
```

```
9.1652
```

 >> |

```
>> %Q6--> angles of triangle with sides 5, 5,4 (mm)
>> % angle b/w sides of length 5 and 5 (mm)
>> Y=asin(Area*2/(5*5)) % Area= (1/2)absin(C) .. angle C=Y
```

```
Y =
```

```
0.8230
```

```
>> C=red2deg(Y)
Unrecognized function or variable 'red2deg'.
```

```
Did you mean:
```

```
>> C=rad2deg(Y)
```

```
C =
```

```
47.1564
```

Command Window

```
>> % other angles are (180-C)/2 ...isosceles triangle  
>> A=(180-C)/2
```

```
A =
```

```
66.4218
```

```
>> B=A
```

```
B =
```

```
66.4218
```

```
>> A+B+C % let;s check whether ans is write or wrong
```

```
ans =
```

```
180
```

Command Window

```
>> %Q7--> swapping b/w numbers
```

```
>> a=2;b=3;
```

```
>> a
```

```
a =
```

```
2
```

```
>> b
```

```
b =
```

```
3
```

```
>> c=a;a=b;b=c;
```

```
>> a
```

```
a =
```

```
3
```

```
>> b
```

```
b =
```

```
2
```

Command Window

```
>> %Q8--. list generation
>> %-->a)
>> A=[4:7] %list from 4 to 7

A =

     4     5     6     7

>> B=[8:-1:2] %;ist from 8 to 2 ...reverse one

B =

     8     7     6     5     4     3     2

>> C=[1:pi:22] % list with step pi

C =

    1.0000    4.1416    7.2832    10.4248    13.5664    16.7080    19.8496

>> D=[1:pi:11],E=[11:4:22]

D =

    1.0000    4.1416    7.2832    10.4248

E =

    11    15    19

>> F=[D,E]
```

Command Window

```
>> %Q8-->d) sum of even , odd numbers b/w 200 to 300 ,0 to 100 resp.,  
>> % using inbuilt function  
>> A=sum(202:2:298),B=sum(1:2:100)
```

```
A =
```

```
12250
```

```
B =
```

```
2500
```

```
>> % using formula
```

```
>> E_sum=0;
```

```
>> for i=202:2:298
```

```
E_sum=E_sum+i;
```

```
end
```

```
>> E_sum
```

```
E_sum =
```

```
12250
```

```
>> O_sum=0;
```

```
>> for i=1:2:100
```

```
O_sum=O_sum+i;
```

```
end
```

```
>> O_sum
```

```
O_sum =
```

```
2500
```


Command Window

```
>> %Q9-->
>> % prime numbers from 1 to 100
>> a=[]; c=0;
>> for i=1:100
if isprime(i)==1
c=c+1;
a(c)=i;
end
end
>> a

a =

     2     3     5     7    11    13    17    19    23    29    31    37    41    43    47    53    59    61    67    71    73    79    83    89    97

fx >>
```